

## Unit 3 PHYSIOLOGY AND BENEFITS OF EXERCISE

### Pre-reading activities

#### BRAINSTORMING

**Task 1.1** Talk to the people sitting near you and brainstorm your knowledge of physiology and benefits of exercise. What have you already studied on the topic?

#### SYNONYMS AND ANTONYMS

Learning a large number of words relating to a specific topic makes reading on that topic much easier. Knowing synonyms and antonyms is one way to build a topic-based vocabulary.



A **synonym** is a word that has a *similar* meaning to another word.

An **antonym** is a word that has the *opposite* meaning to another word.

**Task 1.2** The following words occur in the text. Find five pairs of near synonyms in the first line and four pairs of antonyms in the second one.

1. *improve – maintain – enhance – aid – stretch – help – keep – affect – extend – influence*

2. *increase – lengthen – reduce – stretch – anaerobic – contract – shorten – aerobic*

#### SCANNING

Scanning involves looking quickly through a text to find a specific word or piece of information. There are often times when it is necessary to do this, such as when studying for a test, so it is a useful skill to practise.

**Task 1.3** Scan the text below quickly to match paragraphs with suitable headings.

**Basic Physiology of Exercise**

**Aerobic Exercise**

**Benefits of Exercise**

**What is exercise?**

**Anaerobic Exercise**

Heading 1:.....

1. Exercise is an activity that results in contraction of skeletal muscle. The term is usually used in reference to any activity that improves physical fitness. Although<sup>1</sup> muscle contraction is the common element of all forms of exercise, many other organs and systems are affected, for example, the heart and lungs.

Heading 2:.....

2. Contraction of skeletal muscles, the muscles under conscious<sup>2</sup> control, is the primary physiological event during exercise. Because skeletal muscles can actively contract, but are not designed to actively lengthen, they are arranged<sup>3</sup> as opposing pairs. As one muscle shortens, another is stretch<sup>4</sup>ed. An example of such a pair of muscles can be observed<sup>5</sup> in the upper arm, where the biceps and triceps have opposite actions.

Heading 3:.....

3. This type of exercise involves heavy work by a limited number of muscles, for example during weight lifting<sup>6</sup>. These types of activities are maintained only for short intervals, and the supply of oxygen is insufficient for aerobic metabolism, resulting in a substantial oxygen debt. This exercise increases strength and muscle mass, but is of limited benefit to cardiovascular health.

Heading 4:.....

4. This type of exercise uses oxygen to keep large muscle groups moving continuously at an intensity that can be maintained for at least 20 minutes. This form of exercise uses several major muscle groups throughout the body, resulting in greater demands<sup>7</sup> on the cardiovascular and respiratory systems to supply<sup>8</sup> oxygen to the working muscles.

Heading 5:.....

5. Regular exercise reduces the risk of death due to heart disease and stroke<sup>9</sup>, aids in reducing weight, strengthens bones, and enhances immune function. The psychological benefits are also broad. One area of controversy has been how much exercise is enough to improve general health, reduce the risk of heart disease, and increase longevity<sup>10</sup>. Meaningful studies on this topic are very difficult to perform because they require large populations of subjects and many years of data collection, and because poor health sometimes negatively influences physical activity. Despite these difficulties, it is clear that regular exercise, along with a generally healthy lifestyle, is beneficial<sup>11</sup>.

(adapted from: Seal, B. *Academic Encounters*. Cambridge University Press, 1997.)

**Task 1.4** After you read the article, look back at the paragraph headings and summarise the main ideas in your own words.

## 2. HUMAN ANATOMY SYNOPSIS

**Task 2.1** Categorize the following organs into the anatomical systems:

pancreas – vein – ligament – scapula – intestine – kidneys – brain – ventricles – spinal cord– spine – ~~sternum~~ – uterus – trachea – pelvis – gall bladder – esophagus – testicles – tendon – urethra– sacrum – clavicle – thyroid – diaphragm

1. **Cardiovascular system**

6. **Respiratory system**

2. **Digestive system**

7. **Skeletal-muscular system**

3. **Endocrine system**

*sternum,*

4. **Nervous system**

8. **Integumentary system (skin, hair, nails)**

5. **Reproductive system**

9. **Urinary system**

**Task 2.2.**

**Match one of the terms from above with the definition:**

1. controls movement, thought, memory and feeling
2. two bones that go from the base of the neck to the shoulders
3. layer of muscle between the lungs and the stomach to control breathing
4. remove waste products from the blood and produce urine
5. produces insulin, helps digestion
6. wide curved set of bones connecting legs and spine
7. nerves inside the spine connecting all parts of the body to the brain
8. tissue joining a muscle to a bone
9. any of the tubes that carry blood from all parts of the body towards the heart

### 3. GERUND, INFINITIVE, ADVERBS, ADJECTIVES

#### GERUND, INFINITIVE

Discuss the difference in meaning between these sentences. Then decide how each one might continue, as in the examples:

They went on *running* even though they were tired.  
They went on *to run* ten more miles.

- 1a We stopped to take photos because.....
- 1b We stopped taking photos because.....
- 2a Did you remember to send the fax or.....?
- 2b Do you remember sending the fax or.....?

**Task 3.1** Complete the sentences with your own ideas, using *-ing* or *to*:

1. To get from the airport to the hotel I recommend you.....*to take a taxi*.
2. I've never been to America but I hope.....
3. After doing the first exercise I gave up.....
4. Some people enjoy..... but I prefer.....
5. The book was so interesting that I kept on.....
6. I don't mind.....
7. I'd love .....
8. I am sorry but I can't afford.....
9. It's a pity that it isn't allowed.....
10. I will tell you the secret but you have to promise not.....

#### ADVERBS, ADJECTIVES

Difference between *-ed* and *-ing* adjectives. Jane gets **bored** if the film she is watching is **boring**. Or, if something is **boring**, it makes you **bored**.

**Task 3.2** Complete the sentences using one of the words:

*annoying/annoyed; pleasing/pleased; confusing/confused; disgusting/disgusted; exciting/excited; exhausting/exhausted; interesting/interested; surprising/surprised*

1. He works very hard. It's not .....*surprising*.....that he's always tired.
2. It was a .....result.
3. The explanation was..... Most of the students did not understand it.
4. The kitchen hadn't been cleaned for ages. It was really.....
5. I seldom visit art galleries. I am not really ..... in art.
6. There's no need to get ..... just because I'm a few minutes late.
7. I asked Emily if she wanted to come out with us but she wasn't .....
8. I've been working very hard all day and now I'm.....
9. I'm starting a new job next week. I'm quite.....

Some adjectives can be used immediately **after** the noun: the crowds **watching**, the rooms **used** /similar use to defining relative clauses – the crowds that were watching, the room that was used/, the candidates **applying**  
Some adjectives are used immediately **after or before** the noun: the area **infected**, or the **infected** area.

**Task 3.3** Study the following adverbs and adjectives:

Free /for no money/	freely /willingly/
Late /not on time/	lately /recently/
Hard /with efforts/	hardly /scarcely/
High /about altitude/	highly /a lot/
Wide /completely/	widely /in many places/

**Task 3.4** Complete the sentences with appropriate forms of the adverbs above:

1. She gave me her ticket .....*free*....., she did not want any money for it.
2. She helped me really.....she was willing to help me.
3. The country is ..... developed, the standard of living is very good.
4. I ..... know Peter, we met maybe once only.
5. The door was .....open so I went straight in.
6. The book is ..... available, it won't be difficult to get it.

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1	although – ačkoli, i když
2	conscious – vědomý
3	arranged – uspořádaný
4	enhance – zvýšit, zvětšit
5	observe – pozorovat
6	weight lifting – vzpírání
7	demand – požadavek
8	supply – dodávat
9	stroke – mozková mrtvice/ příhoda
10	longevity – dlouhověkost
11	beneficial – blahodárný, prospěšný